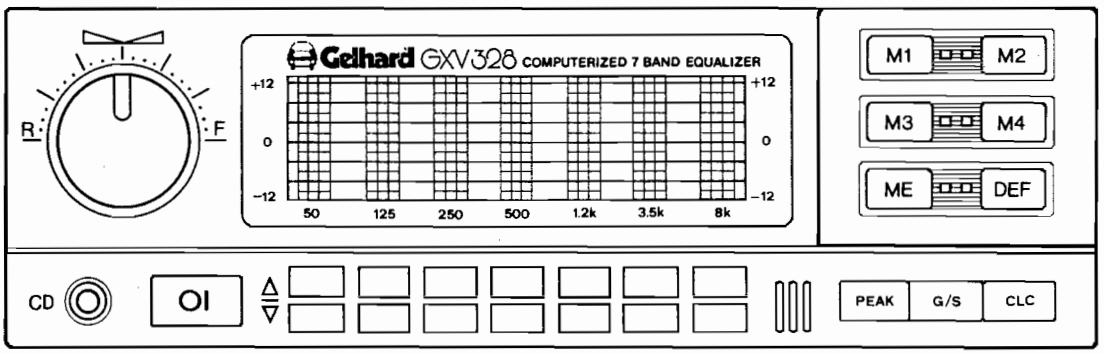
# SERVICE MANUAL

## GXV 328

## COMPUTERIZED 7 BAND EQUALIZER




Gelhard®
West Germany

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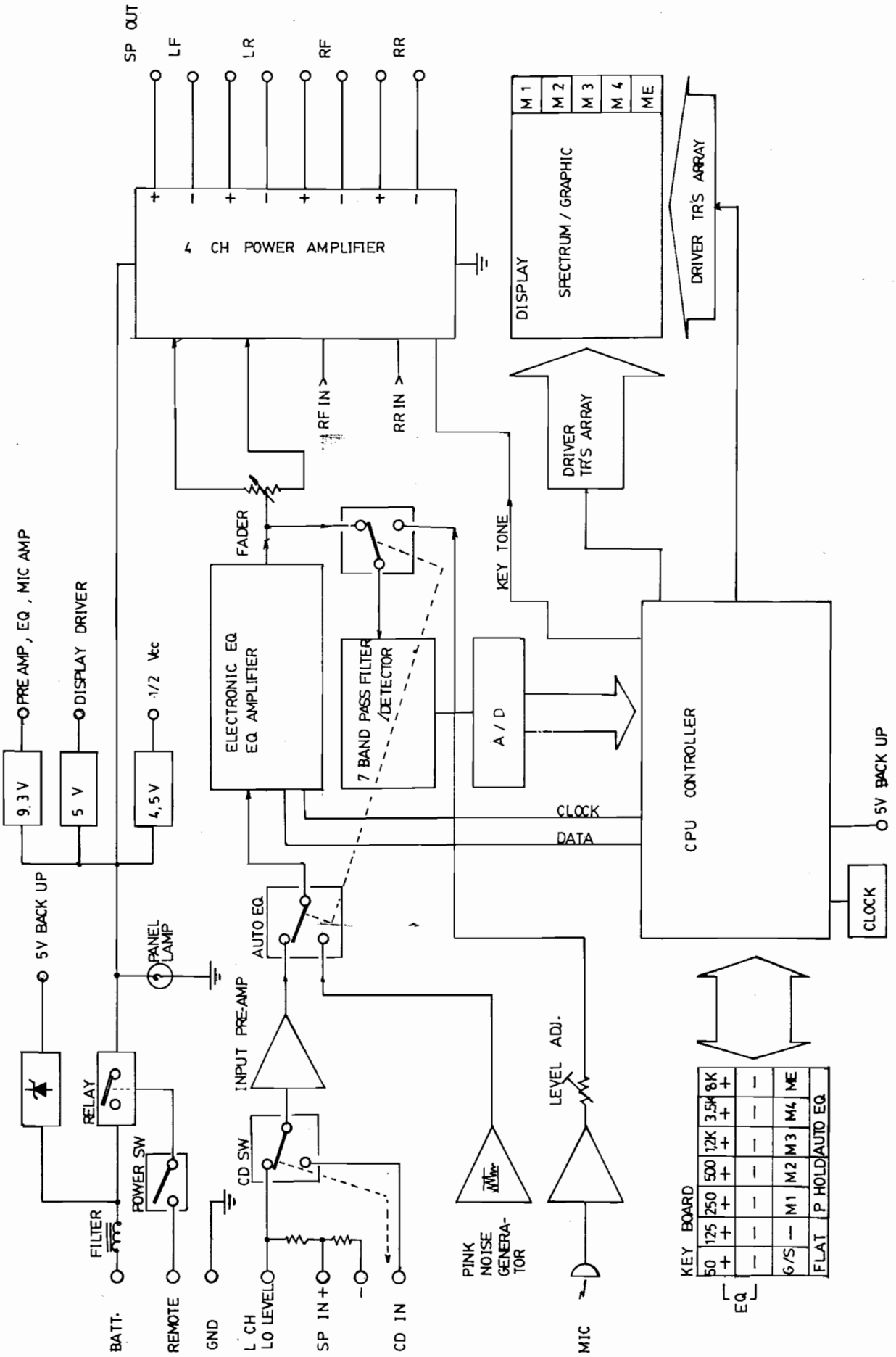
# SPECIFICATION

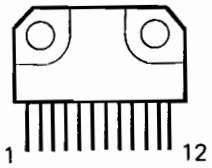
| Description | | Nominal Spec. | Limit Spec. |
|---|---|---|---|
| MAX. Output Power | | 30W x 4 | 28W x 4 |
| 10% THD Output Power | | 20W x 4 | 18W x 4 |
| 1% THD Output Power | | 16W x 4 | 14W x 4 |
| THD at 1W | | 0.15% | 0.5% |
| S/N Ratio (Flat) | | 58 dB | 50 dB |
| Frequency Response (−3 dB) | | 30Hz ~ 40KHz | 40Hz ~ 18KHz |
| Channel Separation | | 45 dB | 35 dB |
| Input Sensitivity at 1W Output | LOW IMP | 1.1V | 1.1V ± 0.5V |
| | HI IMP/CD IMP | 90mV | 90mV ± 30mV |
| Input Impedance | LOW IMP | 47Ω | 47Ω ± 20% |
| | HI IMP | 20KΩ | ⩾ 10KΩ |
| Equalization Center Freq. 50, 125, 250, 500, 1.2K, 3.5K, 8K (Hz) | | 50, 125, 250, 500 1.2K, 3.5K, 8K (Hz) | △f ± 15% |
| Equalization Range | | 11 dB | 11 dB ± 2 dB |
| LED. Meter Sensitivity (Output Level) | | 1.3V | 1.3V ± 0.5V |
| MAX. Current | | 10A | 12A |
| Pink Noise Output Level | | 300mV | 300mV ± 50mV |

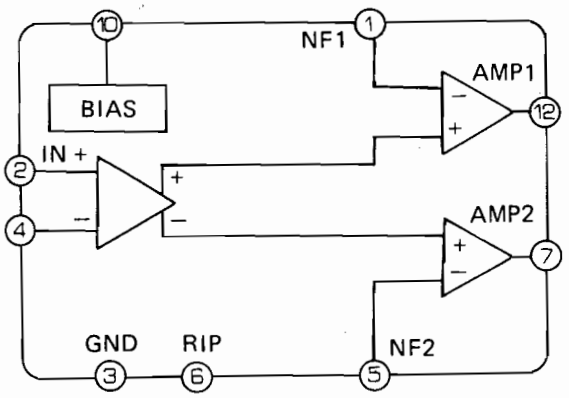
# BLOCK DIAGRAM



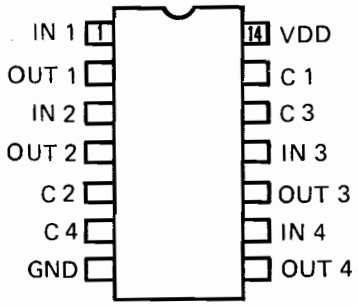
# SEMICONDUCTORS

IC102, IC103 TA7250
IC202, IC203 TA 7250

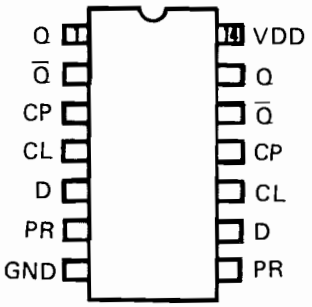


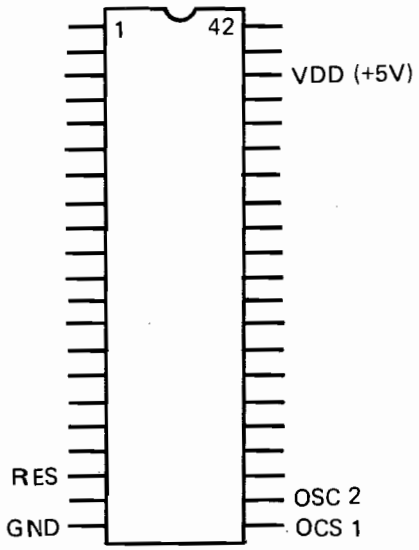

IC104, IC204 CD4066



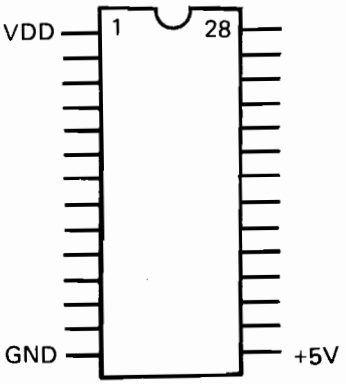

IC302 CD4013




IC309 22-1706

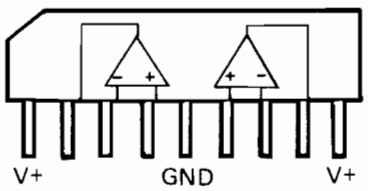



IC310 LC7522

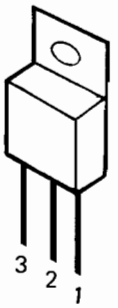


IC100, IC101
IC304, IC305, IC307

NJM4558S

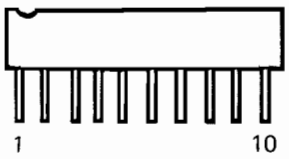



IC301
78M05A

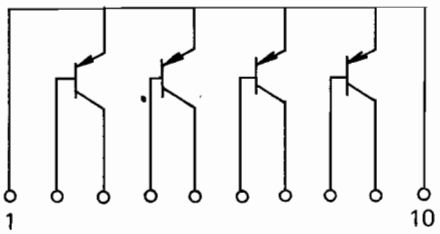



1. OUT
2. GND
3. IN

Q327, Q328
TA64



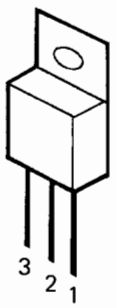

TA64



IC300 78L05
IC303 78L09
IC306 78L05

1. IN
2. GND
3. OUT

Q300
TIP42

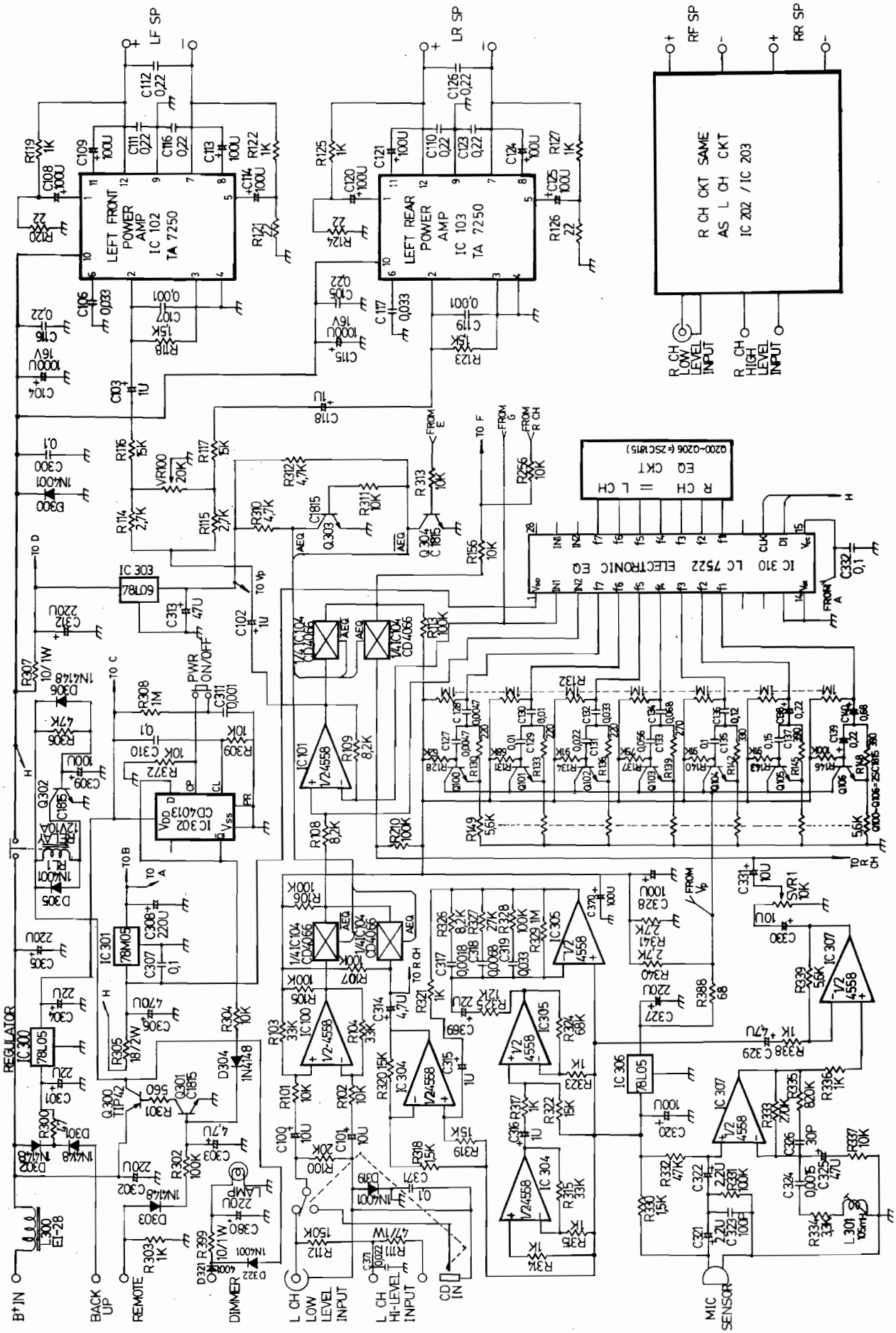



1. E
2. C
3. B

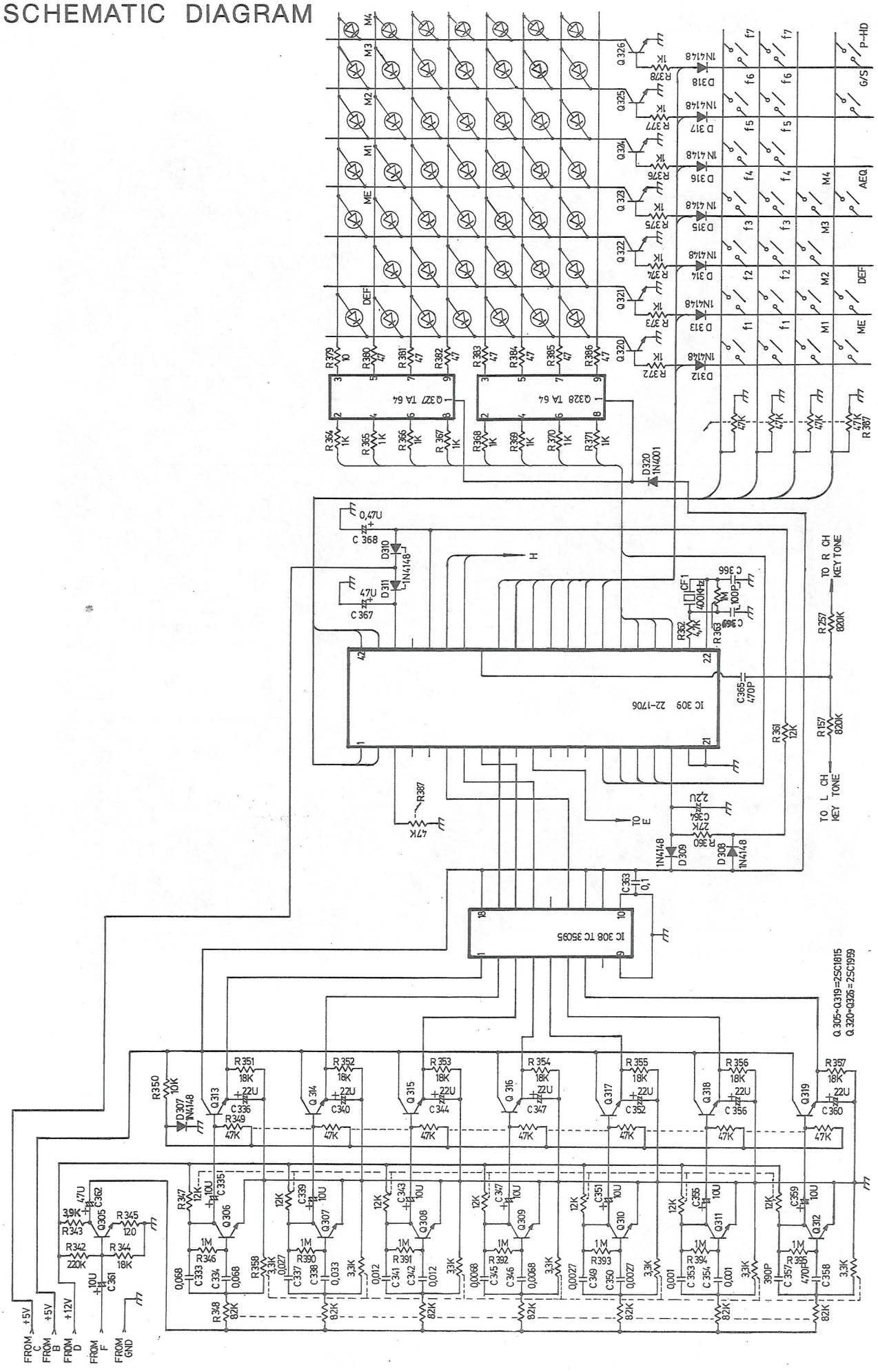
2SC1815Y —
Q100 ~ Q106, Q200 ~ Q206
Q301 ~ Q307, Q308 ~ Q319

2SC1959Y —
Q320 ~ Q326

# SCHEMATIC DIAGRAM

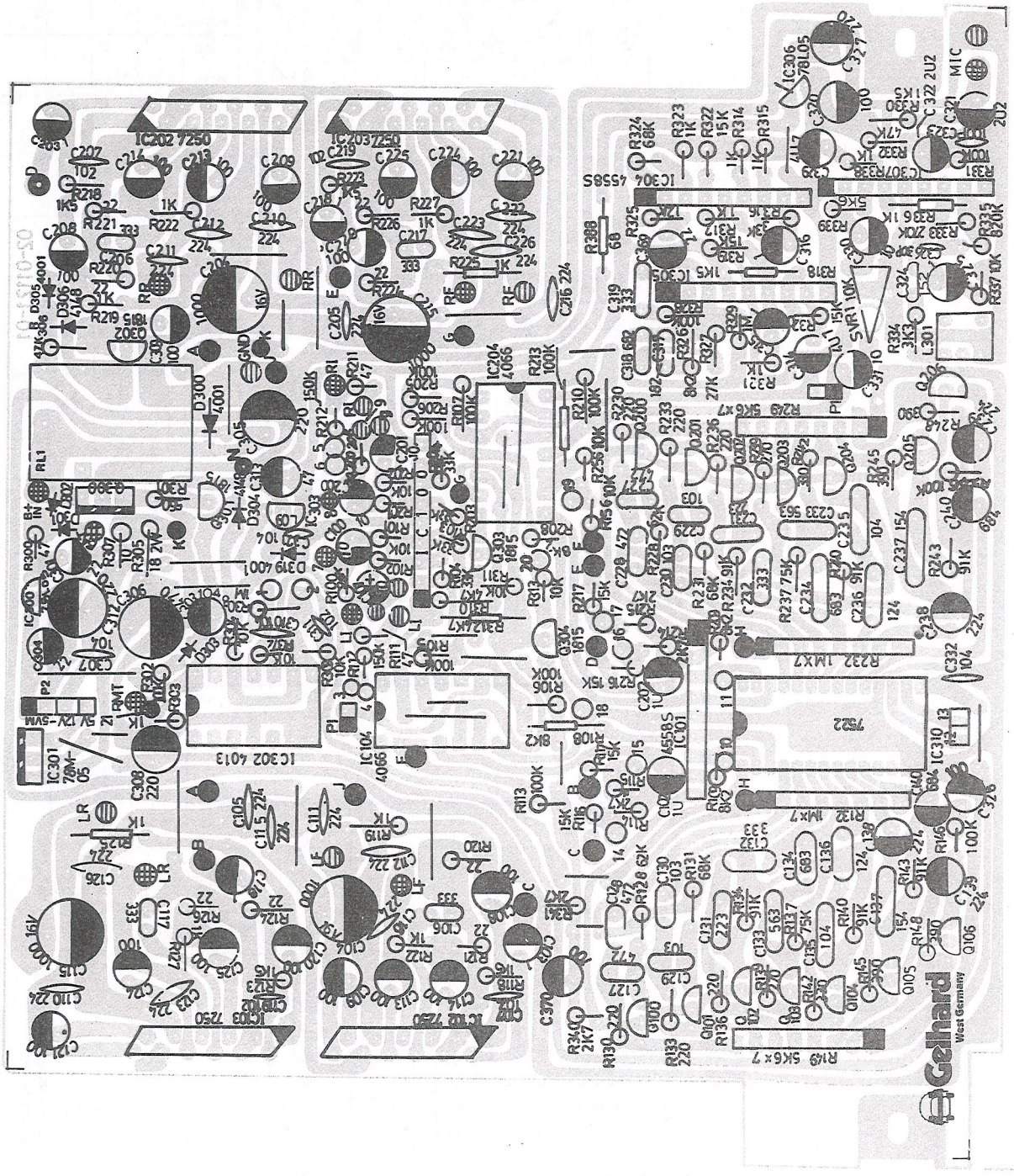


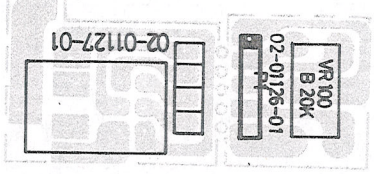
# SCHEMATIC DIAGRAM

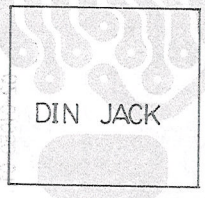


# P. C. BOARDS

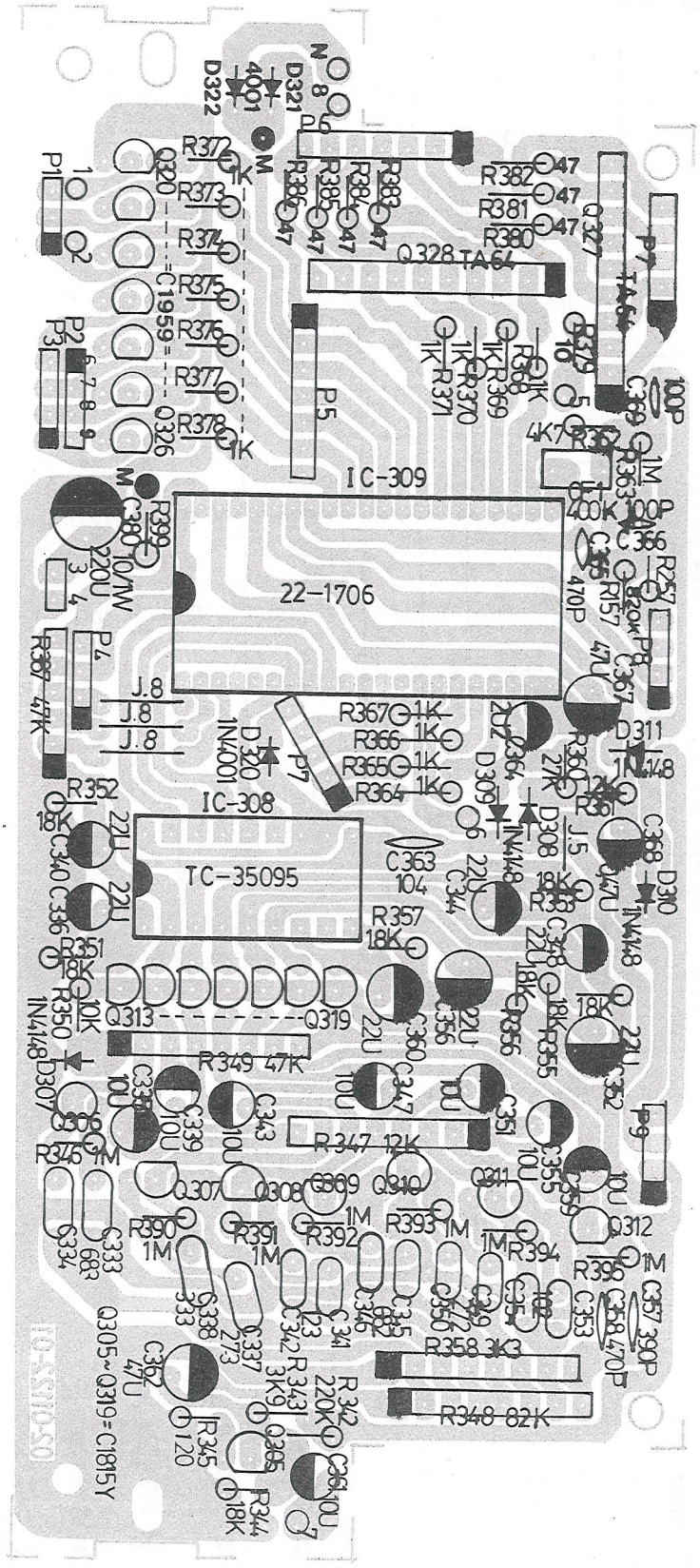
## AMP P.C. BOARD



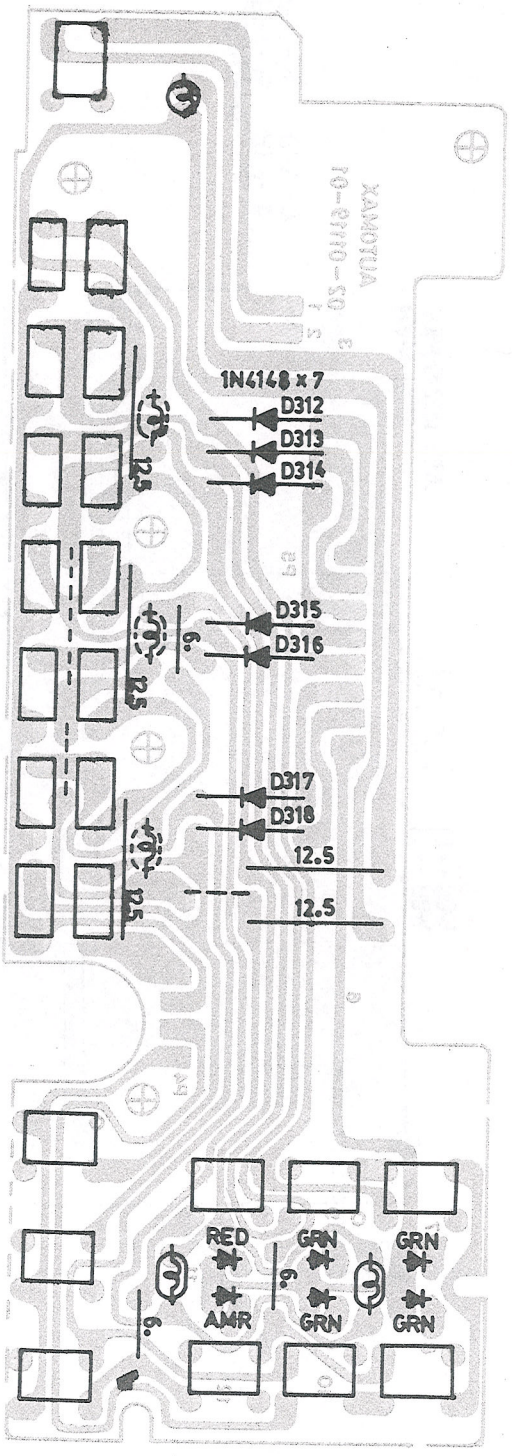



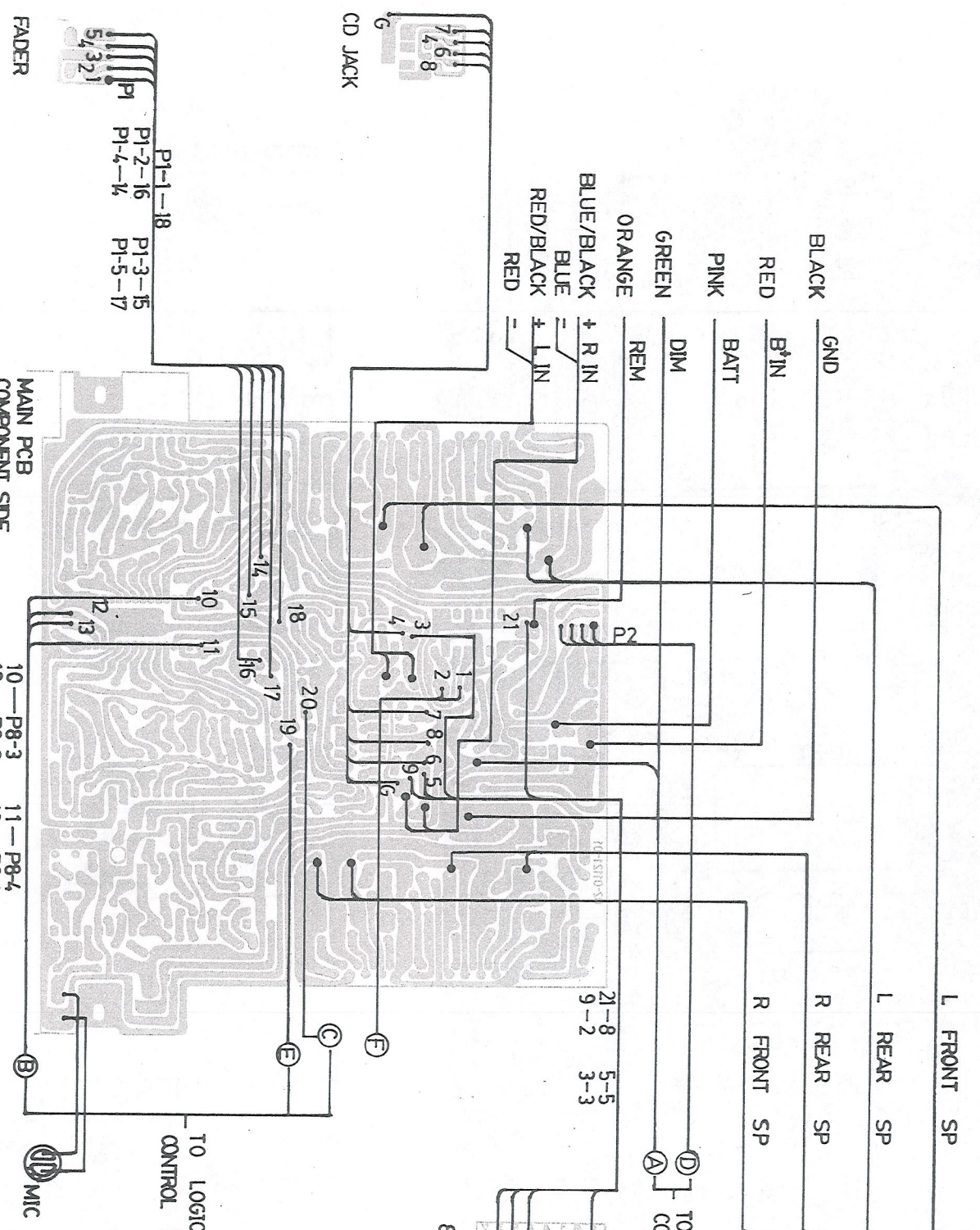
## LOGIC CONTROL P. C. BOARD



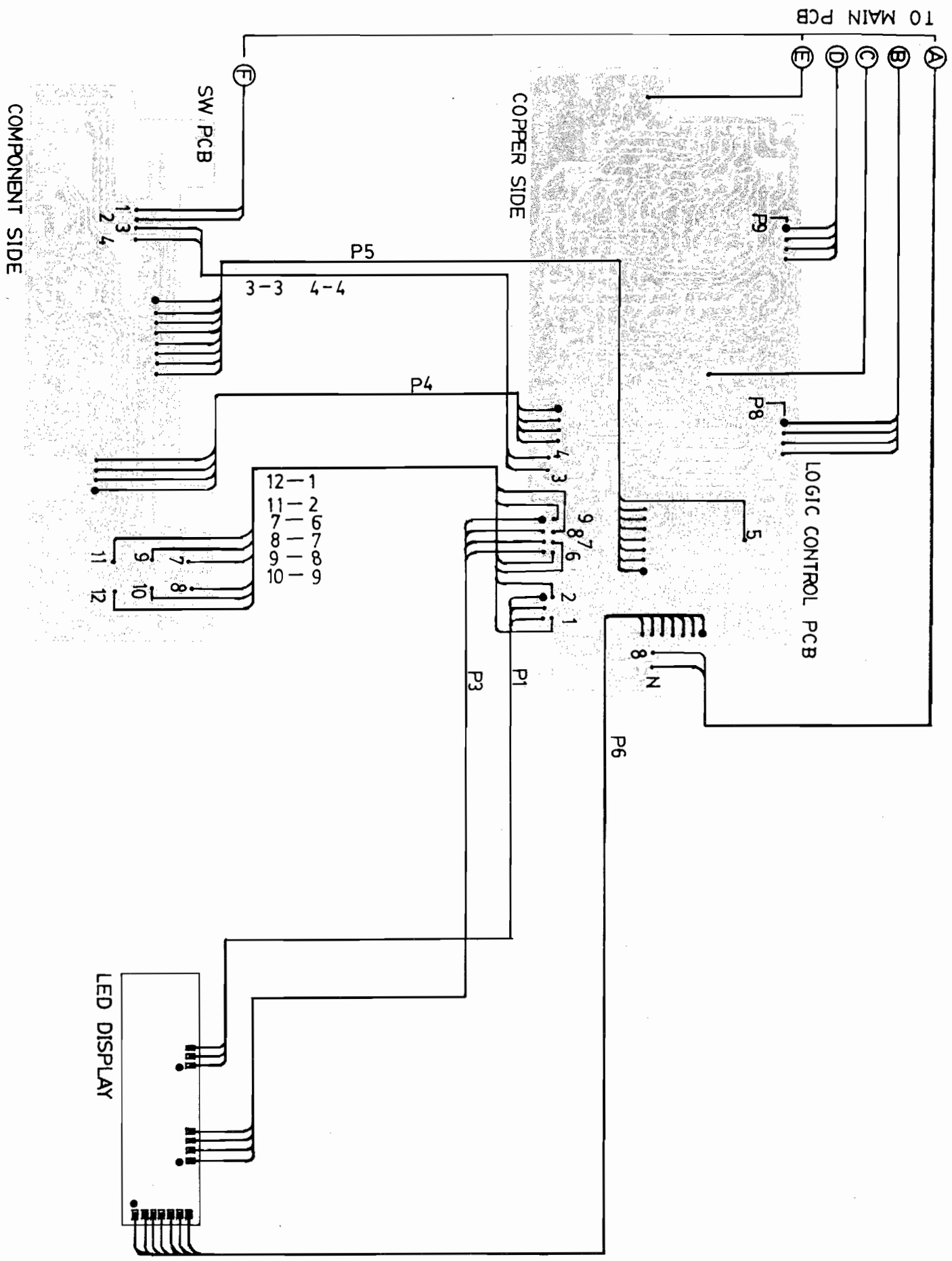

## SWITCH P.C. BOARD



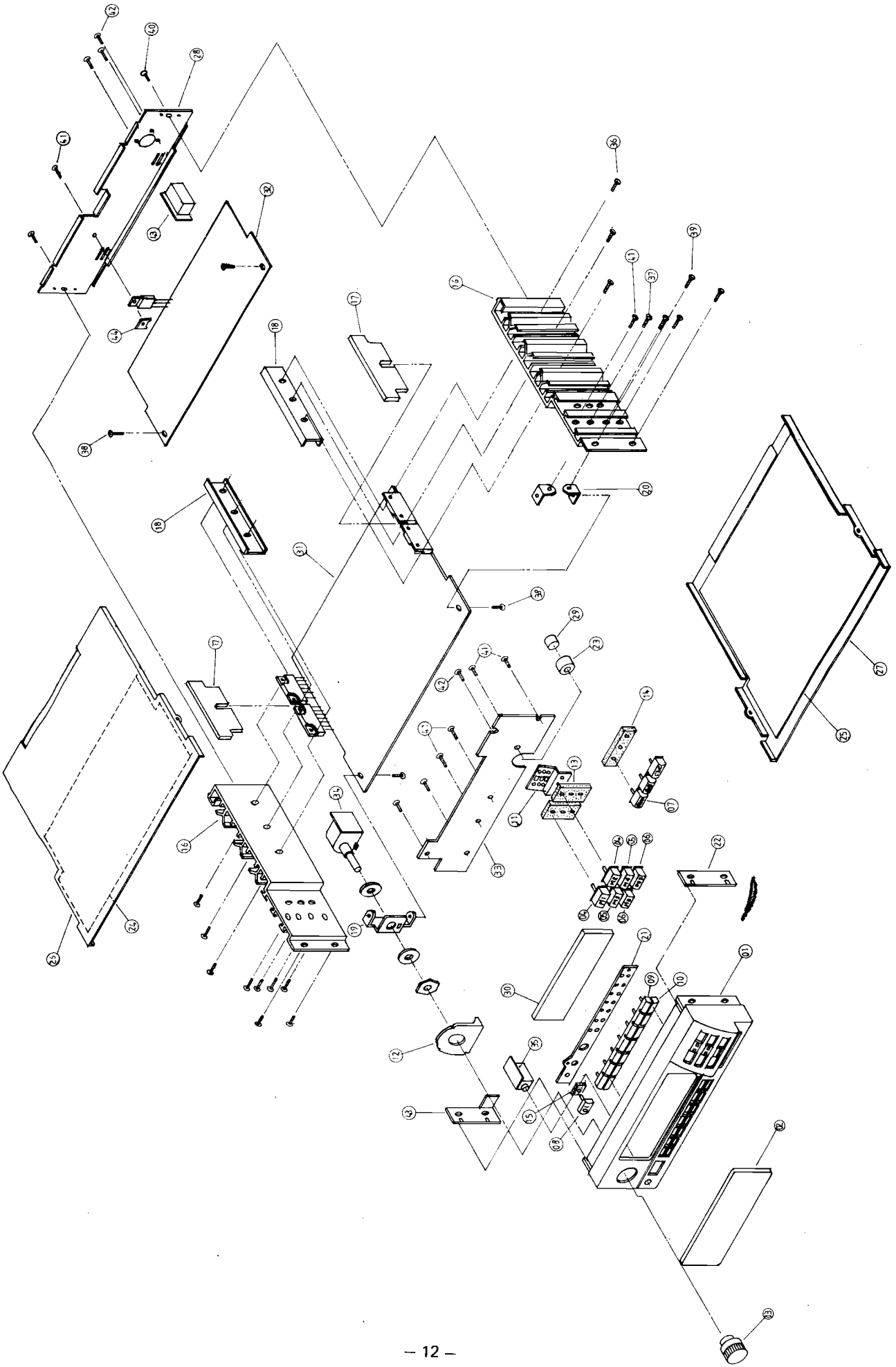
# WIRING DIAGRAM



# WIRING DIAGRAM



# EXPLODED VIEW



# PARTS LIST

## ELECTRICAL PARTS LIST

| SEMICONDUCTORS | | | | |
|---|---|---|---|---|
| **Ref. No.** | **Description** | | **MFR's Part Number** | **Remarks** |
| IC100 | IC | NJM4558S | 22-01398-01 | |
| IC101 | IC | NJM4558S | 22-01398-01 | |
| IC102 | IC | TA7250BP | 22-01263-02 | |
| IC103 | IC | TA7250BP | 22-01263-02 | |
| IC104 | IC | CD4066 | 22-00581-01 | |
| IC202 | IC | TA7250BP | 22-01263-02 | |
| IC203 | IC | TA7250BP | 22-01263-02 | |
| IC204 | IC | CD4066 | 22-00581-01 | |
| IC300 | IC | 78L05A | 22-00584-01 | |
| IC301 | IC | 78M05A | 22-01497-01 | |
| IC302 | IC | BU4013B | 22-01862-01 | |
| IC303 | IC | 78L09 | 22-01538-01 | |
| IC304 | IC | NJM4558S | 22-01398-01 | |
| IC305 | IC | NJM4558S | 22-01398-01 | |
| IC306 | IC | 78L05A | 22-00584-01 | |
| IC307 | IC | NJM4558S | 22-01398-01 | |
| IC308 | IC | TC35095P | 22-01659-01 | |
| IC309 | IC | AUTOMAX | 22-01706-01 | |
| IC310 | IC | LC7522 | 22-01376-01 | |
| D300 | DIODE | IN4001 | 24-00026-03 | |
| D301 | DIODE | IN4148 | 24-00026-05 | |
| D302 | DIODE | IN4148 | 24-00026-05 | |
| D303 | DIODE | IN4148 | 24-00026-05 | |
| D304 | DIODE | IN4148 | 24-00026-05 | |
| D305 | DIODE | IN4001 | 24-00026-03 | |
| D306 | DIODE | IN4148 | 24-00026-05 | |
| D307 | DIODE | IN4148 | 24-00026-05 | |
| D308 | DIODE | IN4148 | 24-00026-05 | |
| D309 | DIODE | IN4148 | 24-00026-05 | |
| D310 | DIODE | IN4148 | 24-00026-05 | |
| D311 | DIODE | IN4148 | 24-00026-05 | |
| D312 | DIODE | IN4148 | 24-00026-05 | |
| D313 | DIODE | IN4148 | 24-00026-05 | |
| D314 | DIODE | IN4148 | 24-00026-05 | |
| D315 | DIODE | IN4148 | 24-00026-05 | |
| D316 | DIODE | IN4148 | 24-00026-05 | |
| D317 | DIODE | IN4148 | 24-00026-05 | |
| D318 | DIODE | IN4148 | 24-00026-05 | |
| D319 | DIODE | IN4001 | 24-00026-03 | |
| D320 | DIODE | IN4001 | 24-00026-03 | |
| D321 | DIODE | IN4001 | 24-00026-03 | |
| D322 | DIODE | IN4001 | 24-00026-03 | |
| Q100 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q101 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q102 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q103 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q104 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q105 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q106 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q200 | Transistor | 2SC1815Y | 23-00058-01 | |

| | | | | |
|---|---|---|---|---|
| Q201 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q202 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q203 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q204 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q205 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q206 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q300 | Transistor | TIP42 | 23-01935-01 | |
| Q301 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q302 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q303 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q304 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q305 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q306 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q307 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q308 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q309 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q310 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q311 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q312 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q313 | Transistor | 2SC1815Y | 23-00058-01 | |
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| Q315 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q316 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q317 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q318 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q319 | Transistor | 2SC1815Y | 23-00058-01 | |
| Q320 | Transistor | 2SC1959Y | 23-01115-01 | |
| Q321 | Transistor | 2SC1959Y | 23-01115-01 | |
| Q322 | Transistor | 2SC1959Y | 23-01115-01 | |
| Q323 | Transistor | 2SC1959Y | 23-01115-01 | |
| Q324 | Transistor | 2SC1959Y | 23-01115-01 | |
| Q325 | Transistor | 2SC1959Y | 23-01115-01 | |
| Q326 | Transistor | 2SC1959Y | 23-01115-01 | |
| Q327 | Transistor | TA64 | 23-01930-01 | |
| Q328 | Transistor | TA64 | 23-01930-01 | |
| M1 | LED | L-642GD | 25-09007-65 | |
| M2 | LED | L-642GD | 25-09007-65 | |
| M3 | LED | L-642GD | 25-09007-65 | |
| M4 | LED | L-642HD | 25-09005-62 | |
| DEF | LED | L-642AD | 25-09006-66 | |

**RESISTORS**

| Ref. No. | Description | | | | MFR's Part Number | Remarks |
|---|---|---|---|---|---|---|
| R100 | Carbon | 20k ohm | 1/4W | ±5% | 08-42035-01 | |
| R101 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R102 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R103 | Carbon | 33k ohm | 1/4W | ±5% | 08-43335-01 | |
| R104 | Carbon | 33k ohm | 1/4W | ±5% | 08-43335-01 | |
| R105 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R106 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R107 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R108 | Carbon | 8.2k ohm | 1/4W | ±5% | 08-48225-03 | |
| R109 | Carbon | 8.2k ohm | 1/4W | ±5% | 08-48225-01 | |
| R111 | Metal Film | 47 ohm | 1W | ±5% | 09-14705-02 | |
| R112 | Carbon | 150k ohm | 1/4W | ±5% | 08-41545-01 | |
| R113 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| R114 | Carbon | 2.7k ohm | 1/4W | ±5% | 08-42725-01 | |
| R115 | Carbon | 2.7k ohm | 1/4W | ±5% | 08-42725-01 | |
| R116 | Carbon | 15k ohm | 1/4W | ±5% | 08-41535-01 | |
| R117 | Carbon | 15k ohm | 1/4W | ±5% | 08-41535-01 | |
| R118 | Carbon | 1.5k ohm | 1/4W | ±5% | 08-41525-01 | |
| R119 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R120 | Carbon | 22 ohm | 1/4W | ±5% | 08-42205-01 | |
| R121 | Carbon | 22 ohm | 1/4W | ±5% | 08-42205-01 | |
| R122 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R123 | Carbon | 1.5k ohm | 1/4W | ±5% | 08-41525-01 | |
| R124 | Carbon | 22 ohm | 1/4W | ±5% | 08-42205-01 | |
| R125 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-03 | |
| R126 | Carbon | 22 ohm | 1/4W | ±5% | 08-42205-01 | |
| R127 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R128 | Carbon | 62k ohm | 1/4W | ±5% | 08-46235-01 | |
| R130 | Carbon | 220 ohm | 1/4W | ±5% | 08-42215-01 | |
| R131 | Carbon | 68k ohm | 1/4W | ±5% | 08-46835-01 | |
| R132 | ARRAY | 1M ohm | 1/4W | ±5% | 08-41055-71 | |
| R133 | Carbon | 220 ohm | 1/4W | ±5% | 08-42215-01 | |
| R134 | Carbon | 91k ohm | 1/4W | ±5% | 08-49135-01 | |
| R136 | Carbon | 220 ohm | 1/4W | ±5% | 08-42215-01 | |
| R137 | Carbon | 75k ohm | 1/4W | ±5% | 08-47535-01 | |
| R139 | Carbon | 270 ohm | 1/4W | ±5% | 08-42715-01 | |
| R140 | Carbon | 91k ohm | 1/4W | ±5% | 08-49135-01 | |
| R142 | Carbon | 330 ohm | 1/4W | ±5% | 08-43315-01 | |
| R143 | Carbon | 91k ohm | 1/4W | ±5% | 08-49135-01 | |
| R145 | Carbon | 390 ohm | 1/4W | ±5% | 08-43915-01 | |
| R146 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R148 | Carbon | 390 ohm | 1/4W | ±5% | 08-43915-01 | |
| R149 | ARRAY | 5.6k ohm | 1/4W | ±5% | 08-45625-71 | |
| R156 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R157 | Carbon | 820k ohm | 1/4W | ±5% | 08-48245-01 | |
| R200 | Carbon | 20k ohm | 1/4W | ±5% | 08-42035-01 | |
| R201 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R202 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R203 | Carbon | 33k ohm | 1/4W | ±5% | 08-43335-01 | |
| R204 | Carbon | 33k ohm | 1/4W | ±5% | 08-43335-01 | |
| R205 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R206 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R208 | Carbon | 8.2k ohm | 1/4W | ±5% | 08-45225-01 | |
| R209 | Carbon | 8.2k ohm | 1/4W | ±5% | 08-48225-01 | |
| R210 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R211 | Metal | 47 ohm | 1W | ±5% | 09-14705-02 | |
| R212 | Carbon | 150k ohm | 1/4W | ±5% | 08-41545-01 | |
| R213 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-03 | |
| R214 | Carbon | 2.7k ohm | 1/4W | ±5% | 08-42725-01 | |
| R215 | Carbon | 2.7k ohm | 1/4W | ±5% | 08-42725-01 | |
| R216 | Carbon | 15k ohm | 1/4W | ±5% | 08-41535-01 | |
| R217 | Carbon | 15k ohm | 1/4W | ±5% | 08-41535-01 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| R218 | Carbon | 1.5k ohm | 1/4W | ±5% | 08-41525-01 | |
| R219 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R220 | Carbon | 22 ohm | 1/4W | ±5% | 08-42205-01 | |
| R221 | Carbon | 22 ohm | 1/4W | ±5% | 08-42205-01 | |
| R222 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R223 | Carbon | 1.5k ohm | 1/4W | ±5% | 08-41525-01 | |
| R224 | Carbon | 22 ohm | 1/4W | ±5% | 08-42205-01 | |
| R225 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-03 | |
| R226 | Carbon | 22 ohm | 1/4W | ±5% | 08-42205-01 | |
| R227 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R228 | Carbon | 62k ohm | 1/4W | ±5% | 08-46235-01 | |
| R230 | Carbon | 220 ohm | 1/4W | ±5% | 08-42215-01 | |
| R231 | Carbon | 68k ohm | 1/4W | ±5% | 08-46835-01 | |
| R232 | ARRAY | 1M ohm | 1/4W | ±5% | 08-41055-71 | |
| R233 | Carbon | 220 ohm | 1/4W | ±5% | 08-42215-01 | |
| R234 | Carbon | 91k ohm | 1/4W | ±5% | 08-49135-01 | |
| R236 | Carbon | 220 ohm | 1/4W | ±5% | 08-42215-01 | |
| R237 | Carbon | 75k ohm | 1/4W | ±5% | 08-47535-01 | |
| R239 | Carbon | 270 ohm | 1/4W | ±5% | 08-42715-01 | |
| R240 | Carbon | 91k ohm | 1/4W | ±5% | 08-49135-01 | |
| R242 | Carbon | 330 ohm | 1/4W | ±5% | 08-43315-01 | |
| R243 | Carbon | 91k ohm | 1/4W | ±5% | 08-49135-01 | |
| R245 | Carbon | 390 ohm | 1/4W | ±5% | 08-43915-01 | |
| R246 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R248 | Carbon | 390 ohm | 1/4W | ±5% | 08-43915-01 | |
| R249 | ARRAY | 5.6k ohm | 1/4W | ±5% | 08-45625-01 | |
| R256 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R257 | Carbon | 820k ohm | 1/4W | ±5% | 08-48245-01 | |
| R300 | Carbon | 47 ohm | 1/4W | ±5% | 08-44705-01 | |
| R301 | Carbon | 560 ohm | 1/4W | ±5% | 08-45615-01 | |
| R302 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R303 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R304 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R305 | Metal | 18 ohm | 2W | ±5% | 09-21805-02 | |
| R306 | Carbon | 47k ohm | 1/4W | ±5% | 08-44735-01 | |
| R307 | Metal | 10 ohm | 1W | ±5% | 09-11005-02 | |
| R308 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R309 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R310 | Carbon | 4.7k ohm | 1/4W | ±5% | 08-44725-01 | |
| R311 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R312 | Carbon | 4.7k ohm | 1/4W | ±5% | 08-44725-01 | |
| R313 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R314 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R315 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R316 | Carbon | 33k ohm | 1/4W | ±5% | 08-43335-01 | |
| R317 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R318 | Carbon | 1.5k ohm | 1/4W | ±5% | 08-41525-03 | |
| R319 | Carbon | 15k ohm | 1/4W | ±5% | 08-41535-01 | |
| R320 | Carbon | 15k ohm | 1/4W | ±5% | 08-41535-01 | |
| R321 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R322 | Carbon | 15k ohm | 1/4W | ±5% | 08-41535-01 | |

| | | | | | | |
|---|---|---|---|---|---|---|
| R323 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R324 | Carbon | 68k ohm | 1/4W | ±5% | 08-46835-01 | |
| R325 | Carbon | 12k ohm | 1/4W | ±5% | 08-41235-01 | |
| R326 | Carbon | 8.2k ohm | 1/4W | ±5% | 08-48225-03 | |
| R327 | Carbon | 27k ohm | 1/4W | ±5% | 08-42735-01 | |
| R328 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R329 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R330 | Carbon | 1.5k ohm | 1/4W | ±5% | 08-41525-01 | |
| R331 | Carbon | 100k ohm | 1/4W | ±5% | 08-41045-01 | |
| R332 | Carbon | 47k ohm | 1/4W | ±5% | 08-44735-01 | |
| R333 | Carbon | 270k ohm | 1/4W | ±5% | 08-42745-01 | |
| R334 | Carbon | 3.3k ohm | 1/4W | ±5% | 08-43325-01 | |
| R335 | Carbon | 820k ohm | 1/4W | ±5% | 08-48245-01 | |
| R336 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-03 | |
| R337 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R338 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R339 | Carbon | 5.6k ohm | 1/4W | ±5% | 08-45625-01 | |
| R340 | Carbon | 2.7k ohm | 1/4W | ±5% | 08-42725-01 | |
| R341 | Carbon | 2.7k ohm | 1/4W | ±5% | 08-42725-01 | |
| R342 | Carbon | 220k ohm | 1/4W | ±5% | 08-42245-01 | |
| R343 | Carbon | 3.9k ohm | 1/4W | ±5% | 08-43925-01 | |
| R344 | Carbon | 18k ohm | 1/4W | ±5% | 08-41835-01 | |
| R345 | Carbon | 120 ohm | 1/4W | ±5% | 08-41215-01 | |
| R346 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R347 | ARRAY | 12k ohm | 1/4W | ±5% | 08-41235-71 | |
| R348 | ARRAY | 82k ohm | 1/4W | ±5% | 08-48235-71 | |
| R349 | ARRAY | 47k ohm | 1/4W | ±5% | 08-44735-71 | |
| R350 | Carbon | 10k ohm | 1/4W | ±5% | 08-41035-01 | |
| R351 | Carbon | 18k ohm | 1/4W | ±5% | 08-41835-01 | |
| R352 | Carbon | 18k ohm | 1/4W | ±5% | 08-41835-01 | |
| R353 | Carbon | 18k ohm | 1/4W | ±5% | 08-41835-01 | |
| R354 | Carbon | 18k ohm | 1/4W | ±5% | 08-41835-01 | |
| R355 | Carbon | 18k ohm | 1/4W | ±5% | 08-41835-01 | |
| R356 | Carbon | 18k ohm | 1/4W | ±5% | 08-41835-01 | |
| R357 | Carbon | 18k ohm | 1/4W | ±5% | 08-41835-01 | |
| R358 | ARRAY | 3.3k ohm | 1/4W | ±5% | 08-43325-01 | |
| R360 | Carbon | 27k ohm | 1/4W | ±5% | 08-42735-01 | |
| R361 | Carbon | 12k ohm | 1/4W | ±5% | 08-41235-01 | |
| R362 | Carbon | 4.7k ohm | 1/4W | ±5% | 08-44725-01 | |
| R363 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R364 | Carbon | 1k ohm | 1/4W | ±5% | 08-41025-01 | |
| R379 | Carbon | 10 ohm | 1/4W | ±5% | 08-41005-01 | |
| R380 | Carbon | 47 ohm | 1/4W | ±5% | 08-44705-01 | |
| R381 | Carbon | 47 ohm | 1/4W | ±5% | 08-44705-01 | |
| R382 | Carbon | 47 ohm | 1/4W | ±5% | 08-44705-01 | |
| R383 | Carbon | 47 ohm | 1/4W | ±5% | 08-44705-01 | |
| R384 | Carbon | 47 ohm | 1/4W | ±5% | 08-44705-01 | |
| R385 | Carbon | 47 ohm | 1/4W | ±5% | 08-44705-01 | |
| R386 | Carbon | 47 ohm | 1/4W | ±5% | 08-44705-01 | |
| R387 | ARRAY | 47k ohm | 1/4W | ±5% | 08-44735-51 | |
| R388 | Carbon | 68 ohm | 1/4W | ±5% | 08-46805-03 | |
| R390 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R391 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R392 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R393 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R394 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R395 | Carbon | 1M ohm | 1/4W | ±5% | 08-41055-01 | |
| R399 | Metal | 10 ohm | 1W | ±5% | 09-11005-02 | |

## CAPACITORS

| Ref. No. | Description | | | | MFR's Part Number | Remarks |
|---|---|---|---|---|---|---|
| C100 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C101 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C102 | Aluminum | 1μF | 16V | ±20% | 13-00005-25 | |
| C103 | Aluminum | 1μF | 16V | ±20% | 13-00005-25 | |
| C104 | Aluminum | 1000μF | 16V | +80% −20% | 13-00005-45 | |
| C105 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C106 | Mylar | 0.033μF | 50V | ±10% | 13-00006-05 | |
| C107 | Ceramic | 0.001μF | 50V | +80% −20% | 13-31023-12 | |
| C108 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C109 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C110 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C111 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C112 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C113 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C114 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C115 | Aluminum | 1000μF | 16V | +80% −20% | 13-00005-45 | |
| C116 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C117 | Mylar | 0.033μF | 50V | ±10% | 13-00006-05 | |
| C118 | Aluminum | 1μF | 16V | ±20% | 13-00005-25 | |
| C119 | Ceramic | 0.001μF | 50V | +80% −20% | 13-31023-12 | |
| C120 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C121 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C123 | Ceramic | 0.22μF | 16V | ±20% | 12-22246-52 | |
| C124 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C125 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C126 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C127 | Mylar | 0.0047μF | 50V | ±5% | 13-00006-03 | |
| C128 | Mylar | 0.0047μF | 50V | ±5% | 13-00006-03 | |
| C129 | Mylar | 0.01μF | 50V | ±10% | 13-00006-13 | |
| C130 | Mylar | 0.01μF | 50V | ±10% | 13-00006-13 | |
| C131 | Mylar | 0.022μF | 50V | ±10% | 13-00006-04 | |
| C132 | Mylar | 0.033μF | 50V | ±10% | 13-00006-05 | |
| C133 | Mylar | 0.056μF | 50V | ±10% | 13-00006-44 | |
| C134 | Mylar | 0.068μF | 50V | ±10% | 13-00006-06 | |
| C135 | Mylar | 0.1μF | 50V | ±10% | 13-00006-09 | |
| C136 | Mylar | 0.12μF | 50V | ±10% | 13-00006-49 | |
| C137 | Mylar | 0.15μF | 50V | ±10% | 13-00006-15 | |
| C138 | Aluminum | 0.22μF | 16V | ±20% | 13-00005-22 | |
| C139 | Aluminum | 0.22μF | 16V | ±20% | 13-00005-22 | |
| C140 | Aluminum | 0.68μF | 16V | ±20% | 13-00005-38 | |
| C200 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C201 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C202 | Aluminum | 1μF | 16V | ±20% | 13-00005-25 | |
| C203 | Aluminum | 1μF | 16V | ±20% | 13-00005-25 | |
| C204 | Aluminum | 1000μF | 16V | +80% −20% | 13-00005-45 | |
| C205 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C206 | Mylar | 0.033μF | 50V | ±10% | 13-00006-05 | |
| C207 | Ceramic | 0.001μF | 50V | +80% −20% | 13-31023-12 | |
| C208 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C209 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C210 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C211 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C212 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C213 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C214 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 | |
| C215 | Aluminum | 1000μF | 16V | +80% −20% | 13-00005-45 | |
| C216 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 | |
| C217 | Mylar | 0.033μF | 50V | ±10% | 13-00006-05 | |
| C218 | Aluminum | 1μF | 16V | ±20% | 13-00005-25 | |

| | | | | | |
|---|---|---|---|---|---|
| C219 | Ceramic | 0.001μF | 50V | +80% −20% | 13-31023-12 |
| C220 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 |
| C221 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 |
| C222 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 |
| C223 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 |
| C224 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 |
| C225 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 |
| C226 | Ceramic | 0.22μF | 16V | ±20% | 13-22246-52 |
| C227 | Mylar | 0.0047μF | 50V | ±5% | 13-00006-03 |
| C228 | Mylar | 0.0047μF | 50V | ±5% | 13-00006-03 |
| C229 | Mylar | 0.01μF | 50V | ±10% | 13-00006-13 |
| C230 | Mylar | 0.01μF | 50V | ±10% | 13-00006-13 |
| C231 | Mylar | 0.022μF | 50V | ±10% | 13-00006-04 |
| C232 | Mylar | 0.033μF | 50V | ±10% | 13-00006-05 |
| C233 | Mylar | 0.056μF | 50V | ±10% | 13-00006-44 |
| C234 | Mylar | 0.068μF | 50V | ±10% | 13-00006-06 |
| C235 | Mylar | 0.1μF | 50V | ±10% | 13-00006-09 |
| C236 | Mylar | 0.12μF | 50V | ±10% | 13-00006-49 |
| C237 | Mylar | 0.15μF | 50V | ±10% | 13-00006-15 |
| C238 | Aluminum | 0.22μF | 16V | ±20% | 13-00005-22 |
| C239 | Aluminum | 0.22μF | 16V | ±20% | 13-00005-22 |
| C240 | Aluminum | 0.68μF | 16V | ±20% | 13-00005-38 |
| C301 | Aluminum | 22μF | 16V | +80% −20% | 13-00005-21 |
| C303 | Ceramic | 0.1μF | 16V | ±20% | 13-21046-52 |
| C304 | Aluminum | 22μF | 16V | +80% −20% | 13-00005-21 |
| C305 | Aluminum | 220μF | 16V | +80% −20% | 13-00005-11 |
| C306 | Aluminum | 470μF | 16V | +80% −20% | 13-00005-74 |
| C307 | Ceramic | 0.1μF | 16V | ±20% | 13-21046-52 |
| C308 | Aluminum | 220μF | 16V | +80% −20% | 13-00005-11 |
| C309 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 |
| C310 | Ceramic | 0.1μF | 16V | ±20% | 13-21046-52 |
| C311 | Ceramic | 0.001μF | 50V | +80% −20% | 13-31023-12 |
| C312 | Aluminum | 220μF | 16V | +80% −20% | 13-00005-11 |
| C313 | Aluminum | 4.7μF | 16V | +80% −20% | 13-00005-09 |
| C314 | Aluminum | 4.7μF | 16V | ±20% | 13-00005-27 |
| C315 | Aluminum | 1μF | 16V | ±20% | 13-00005-25 |
| C316 | Aluminum | 1μF | 16V | ±20% | 13-00005-25 |
| C317 | Mylar | 0.0018μF | 50V | ±5% | 13-00006-37 |
| C318 | Mylar | 0.0068μF | 50V | ±5% | 13-00006-07 |
| C319 | Mylar | 0.033μF | 50V | ±10% | 13-00006-05 |
| C320 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 |
| C321 | Aluminum | 2.2μF | 16V | +80% −20% | 13-00005-04 |
| C322 | Aluminum | 2.2μF | 16V | +80% −20% | 13-00005-04 |
| C323 | Ceramic | 100P | 50V | ±10% | 13-51008-11 |
| C324 | Mylar | 0.0015μF | 50V | ±5% | 13-00006-14 |
| C325 | Aluminum | 1μF | 16V | ±20% | 13-00547-03 |
| C326 | Ceramic | 30P | 50V | ±10% | 13-50308-11 |
| C327 | Aluminum | 220μF | 16V | +80% −20% | 13-00005-11 |
| C328 | Aluminum | 100μF | 16V | +80% −20% | 13-00005-10 |
| C329 | Aluminum | 4.7μF | 16V | ±20% | 13-00005-27 |
| C330 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 |
| C331 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 |
| C332 | Ceramic | 0.1μF | 16V | ±20% | 13-21046-52 |
| C333 | Mylar | 0.068μF | 50V | ±10% | 13-00006-06 |
| C334 | Mylar | 0.068μF | 50V | ±10% | 13-00006-06 |
| C335 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 |
| C336 | Aluminum | 22μF | 16V | +80% −20% | 13-00005-21 |
| C337 | Mylar | 0.033μF | 50V | ±10% | 13-00006-05 |
| C338 | Mylar | 0.027μF | 50V | ±10% | 13-00006-41 |
| C339 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 |
| C340 | Aluminum | 0.22μF | 16V | +80% −20% | 13-00005-21 |

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|---|---|---|---|---|---|---|
| C341 | Mylar | 0.012μF | 50V | ±10% | 13-00006-12 | |
| C342 | Mylar | 0.012μF | 50V | ±10% | 13-00006-12 | |
| C343 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C344 | Aluminum | 22μF | 16V | +80% −20% | 13-00005-21 | |
| C345 | Mylar | 0.0068μF | 50V | ±5% | 13-00006-07 | |
| C346 | Mylar | 0.0068μF | 50V | ±5% | 13-00006-07 | |
| C347 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C348 | Aluminum | 22μF | 16V | +80% −20% | 13-00005-21 | |
| C349 | Mylar | 0.0027μF | 50V | ±5% | 13-00006-26 | |
| C350 | Mylar | 0.0027μF | 50V | ±5% | 13-00006-26 | |
| C351 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C352 | Aluminum | 22μF | 16V | +80% −20% | 13-00005-21 | |
| C353 | Mylar | 0.001μF | 50V | ±5% | 13-00006-10 | |
| C354 | Mylar | 0.001μF | 50V | ±5% | 13-00006-10 | |
| C355 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C356 | Aluminum | 22μF | 16V | +80% −20% | 13-00005-21 | |
| C357 | Ceramic | 390P | 50V | ±10% | 13-53908-11 | |
| C358 | Ceramic | 470P | 50V | ±10% | 13-54708-11 | |
| C359 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C360 | Aluminum | 22μF | 16V | +80% −20% | 13-00005-21 | |
| C361 | Aluminum | 10μF | 16V | +80% −20% | 13-00005-06 | |
| C362 | Aluminum | 47μF | 16V | +80% −20% | 13-00005-09 | |
| C363 | Ceramic | 0.1μF | 16V | ±20% | 13-21046-52 | |
| C364 | Aluminum | 2.2μF | 16V | +80% −20% | 13-00005-04 | |
| C365 | Ceramic | 470P | 50V | ±10% | 13-54708-11 | |
| C366 | Ceramic | 100P | 50V | ±10% | 13-51008-11 | |
| C367 | Aluminum | 47μF | 16V | +80% −20% | 13-00005-09 | |
| C368 | Aluminum | 0.47μF | 16V | ±20% | 13-00005-24 | |
| C369 | Ceramic | 100P | 50V | ±10% | 13-51008-11 | |
| C371 | Ceramic | 0.1μF | 16V | ±20% | 13-21046-52 | |
| C371a | Ceramic | 0.022μF | 50V | +80% −20% | 13-32233-12 | |
| C372 | Ceramic | 0.022μF | 50V | +80% −20% | 13-32233-12 | |
| C380 | Aluminum | 220μF | 16V | +80% −20% | 13-00005-11 | |

**MISCELLANEOUS**

| Ref. No. | Description | | MFR's Part Number | Remarks |
|---|---|---|---|---|
| RL-1 | RELAY | 12V. 10A | 20-00160-01 | |
| L301 | COIL | 5307-400-W027 | 42-01928-01 | |
| SVR1 | SVR | 10k | 11-00568-01 | |
| CF1 | Resonator | CSB-400P | 31-01447-01 | |
| F1-F7 | TACT SW | | 18-01933-01 | |
| M1-M4 | TACT SW | SKHHAK2510-ES | 18-01697-01 | |
| DEF, ME | TACT SW | SKHHAK2510-ES | 18-01697-01 | |
| POWER | TACT SW | SKHHAK2510-ES | 18-01697-01 | |
| PEAK, G/S | TACT SW | SKHHAK2510-ES | 18-01697-01 | |
| CLC | TACT SW | SKHHAK2510-ES | 18-01697-01 | |
| | LAMP | 14V 30mA | 19-01352-01 | |
| VR100 | FADER | 18CP01-C1-20SK B20k x 2 | 12-01808-01 | |
| | DIN Connector | DJ-026-8P | 26-01776-01 | |
| | CD JACK | SCJ-0356-5P | 26-01934-01 | |
| | CHOKE | EI-28 | 16-00253-02 | |
| | POWER SUPPLY/INPUT CORD | | 27-01966-01 | |
| | SPEAKER CORD | | 27-01967-01 | |
| | SPECTRUM DISPLAY | LTG-8511MAH | 25-01498-02 | |
| | MICROPHONE CONDENSOR TYPE | | 41-00290-01 | |
| | GIFT BOX | | 61-00669-01 | |
| | POLY FOAM | | 61-00025-02 | |
| | Instruction Book | | 60-00375-01 | |
| | Mounting BRACKET | | 54-00622-01 | |
| | Mounting SCREW | | 59-00197-00 | |

## EXPLODED VIEW

| ITEM | PART NO. | PART NAME | QTY | REMARK |
|---|---|---|---|---|
| 01 | 51-00739-01 | FRONT PANEL | 1 | |
| 02 | 51-00740-01 | ACRYLIC WINDOW | 1 | |
| 03 | 53-00315-00 | FADER KNOB | 1 | |
| 04 | 53-00311-01/02 | PUSH BUTTON A1 | 2 | M1/M2 |
| 05 | 53-00312-01/02 | PUSH BUTTON A2 | 2 | M3/M4 |
| 06 | 53-00313-01/02 | PUSH BUTTON A3 | 2 | ME/DEF |
| 07 | 53-00316-01/02/03 | PUSH BUTTON B | 3 | P/G/S/CLC |
| 08 | 53-00314-01 | PUSH BUTTON D | 1 | 01 |
| 09 | 53-00318-00 | RUBBER BUTTON | 1 | |
| 10 | 53-00318-00 | RUBBER BUTTON | 1 | |
| 11 | 51-00741-01 | ACRYLIC PLATE | 1 | |
| 12 | 51-00743-00 | FADER LIGHT PLATE | 1 | |
| 13 | 55-00650-00 | SPONGE | 2 | |
| 14 | 55-00669-00 | SPONGE | 1 | |
| 15 | 55-00670-00 | SPONGE | 1 | |
| 16 | 56-00250-01 | HEAT. SINK | 2 | |
| 17 | 56-00269-00 | AUX HEAT SINK | 2 | |
| 18 | 54-00694-00 | IC BRACKET | 2 | |
| 19 | 54-00692-00 | BRACKET | 1 | |
| 20 | 54-00639-00 | BRACKET | 2 | |
| 21 | 55-00672-00 | PVC HOLDER | 1 | |
| 22 | 54-00695-00 | PANEL SIDE BRACKET | 1 | |
| 23 | 55-00298-00 | MIC HOLDER | 1 | |
| 24 | 55-00597-00 | FIBER | 1 | |
| 25 | 55-00598-00 | FIBER | 1 | |
| 26 | 52-00472-00 | TOP COVER | 1 | |
| 27 | 52-00473-00 | BOTTOM COVER | 1 | |
| 28 | 52-00471-00 | BACK COVER | 1 | |
| 29 | 41-00290-00 | MIC | 1 | |
| 30 | 25-01498-02 | DISPLAY | 1 | |
| 31 | 03-01121-01 | MAIN PCB ASS'Y | 1 | |
| 32 | 03-01122-01 | DISPLAY DRIVE PCB ASS'Y | 1 | |
| 33 | 03-01119-01 | SW PCB ASS'Y | 1 | |
| 34 | 03-01126-01 | FADER PCB ASS'Y | 1 | |
| 35 | 03-01127-01 | CD JACK PCB ASS'Y | 1 | |
| 36 | SM-PP430-12 | MACHINE SCREW | 6 | M3 x 12L |
| 37 | SM-PP430-06 | MACHINE SCREW | 4 | M3 x 6L |
| 38 | SM-HP530-05 | MACHINE SCREW | 4 | M3 x 5L |
| 39 | SM-PP430-04 | MACHINE SCREW | 4 | M3 x 4L |
| 40 | ST-PP430-04 | TAPPING SCREW | 2 | 3$\phi$ x 4L |
| 41 | ST-PP426-04 | TAPPING SCREW | 11 | 2.6$\phi$ x 4L |
| 42 | ST-RP420-04 | TAPPING SCREW | 4 | 2.0$\phi$ x 4L |
| 43 | 54-00696-00 | PANEL SIDE BRACKET | 1 | |
| 43 | 03-01050-10 | DIN JACK PCB ASS'Y | 1 | |
| 44 | 55-00565-00 | TR STOPPER | 1 | |

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